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GUEST EDITORIAL

# Will Physicians and Scientists Have Any Role in Managing Laboratory Resources in the Year 2000?[1])

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Considering the question raised, the first answer is that physicians and scientists will have no role if they are still waiting to see what will be the changes in Laboratory Medicine and are wondering how to react. Unfortunately, there are too many adherents to the passive approach. The second answer is that they will have a role if they have already changed their way of thinking and are currently constructing the future. Laboratory Medicine is not suffering from a terminal illness but is experiencing the identity crisis of the adolescent.

From my point of view, we are confronted with important challenges and problems:

## The economic challenge

The crisis has been brought about by the economic challenge presented by the desire of governments in all parts of the world to reduce the cost of health care. It is not a radically new vision of health care that is being presented by health planners and economists. The economic goals create the political climate necessary to justify the reduced funding. Do more with less, but do not reduce quality! This has arisen because of high consumer expectations for high-quality care, an ageing population making more demands, and a tempting selection of new and expensive technology.

The economic challenge is a many headed monster with different heads devouring developed and developing countries. No sooner has one head been cut-off than another arises to cause more problems. In most developed countries evidence based medicine is in vogue. However, economists and health policy analysts have a credibility problem in demanding evidence from everyone else while providing little evidence for their policies and financial strategies. Warnings from physicians that the drive for efficiency may harm patients can be downplayed by suggesting that this might be a familiar exercise in shroud waving by doctors and managers (1). In healthcare we have been thrust into the biggest laboratory in the world and coerced to conduct a vast array of uncontrolled experiments.

Consolidation, centralisation, downsizing, re-engineering, rationalisation, restructuring, are painfully familiar terms and represent a list of lamentations for laboratory medicine. The effects of these actions are being seen rapidly in Canada and the United States, where the cuts are real and deep. In the United Kingdom in May 1996 the Guardian Newspaper ran two articles (2, 3) about financial problems in the National Health Service (NHS). The first article reported that NHS hospital trusts had met the Secretary-of-State for Health and warned of severe financial difficulties facing trusts, including the prospect of financial "meltdown".

## Academic and service positions for laboratory scientists and physicians

Some reports in the United States have suggested that there will continue to be a reduction in laboratory positions (4, 5). In Canada a significant number of laboratory scientists and physicians, particularly in Clinical Chemistry, have lost their jobs. Many retirements have not been filled. Research budgets in industry in North America and Europe have been cut. All this means a reduction in academic, service and industry positions for laboratory professionals. If anyone is currently saying that their environment has not yet been hit by such problems, it soon will be. Laboratory services are easy targets for politicians and administrators. Removing beds or clinical services frequently provokes public reaction. Cutting laboratory services, or positions of scientists and physicians who are being paid more than most health care workers, brings tears only to the eyes of laboratory staff and their families. We have not done a good job of promoting our profession, or in providing evidence that high quality laboratory work contributes to correct and timely decisions to improve the quality of health care, thus making better use of the existing and limited resources.

[1]) Based on a lecture given at the XVI International Congress of Clinical Chemistry, London (UK), July 1996.

If laboratory physicians and scientists do not know where they have come from, where they are now and where they want to go, then someone else will lead where we do not want to go. This will not be healthy for the profession. The International Federation of Clinical Chemistry (IFCC) Strategic Plan started as an idea in 1990, a difficult concept for a multicultural, multilingual organisation. It began to emerge as a more coherent plan in 1993–1994. The key element was to move from a restricted, backward looking definition of Clinical Chemistry and to define it as the application of chemical, molecular and cellular concepts and techniques to the understanding and the evaluation of human health and disease.

Your vision, your definition, your strategy for your own environment must already be present or you are in trouble concerning your future role. It is essential that in the presence of management, education and technology challenges, we never forget that Laboratory Medicine (Pathology, in the broadest sense) is a clinical service. Forget that and laboratory scientists and physicians will have a very small role in the year 2000.

## The clinical challenge

Many scientific and medically qualified clinical chemists are almost invisible in the clinical environment of the hospital. Knowing theoretically the clinical relevance and application of chemistry/biochemistry is not enough in the hospital. The laboratory scientist has to gain acceptance as a member of the medical staff. Greater visibility, including rounds, comittees, "real" consultation, demonstration of knowledge, self-marketing and self-promoting, will be judged chiefly in relation to the clinical value they bring. More will be written later about the additional clinical challenge facing the laboratory physician.

For the laboratory scientist there is much wisdom in the statement of the Athena Society that the clinical knowledge and skills needed include physiology, pathophysiology, molecular biology, microbiology, virology, immunology, and coagulation/haemostasis (6). Clinical chemists are already involved in non-traditional areas, including automated haematology, thrombosis/haemostasis, molecular biology, serology, and some aspects of microbiology. However, if this is only a technical involvement there is no future. There needs to be clinical competence and clinical value for meaningful and continued involvement.

Knowledge will also be required in even less traditional areas such as cytogenetics, pharmacology, epidemiology, nutrition, environmental toxicology, genetics, and anatomic pathology. There is a need to look beyond the traditional and to embrace new insights and approaches from other disciplines. Anatomic pathology is not a solitude but it is an integral part of Laboratory Medicine. It also needs to interact and realise that its high class pattern recognition will be profoundly affected by advanced computerisation, advanced immunology, and molecular diagnostics.

## The challenge of new technology

Some of the evolutionary and revolutionary technological changes occurring in scientific and engineering disciplines have been reviewed and presented (7, 8). The new developments in advanced computers, micro-technology, advanced immunodiagnostics, neural networks and molecular biology, will continue to affect the type of skilled professionals needed in the laboratory. Much of the science will be handled by these sophisticated systems, while the practical and mundane steps in the diagnostic process will require fewer people. There will be work for highly skilled managers and clinical consultants who, if they want to remain relevant, will have to be constantly aware of the emergence of these new technologies and how to apply them in the laboratory to enhance patient care. This means constant retraining. A lack of awareness and adaptation will destroy our profession.

## The management challenge

It is not sufficient for the laboratory to be a repository of scientific, technical and clinical information. The laboratory physicians and scientists must provide the highest management skills for the maximum efficiency and effectiveness of laboratory resources. Second rate managers will not last long. Total Quality Management (TQM) must be inculturated so that it is more than an obscure management jargon. It includes resource management, financial management and analysis, focusing on customers, team-building, understanding the process from test requests through analysis to interpretation and analysis of outcomes. All this is necessary to maintain and evaluate the effectiveness of the laboratory.

However, distinctions must be made between Directing and Managing (9). Part of the weakness in laboratory medicine was that it had become management top heavy, and it is these layers which are currently being stripped away. To "Direct" is to be expected to have vision which encompasses the whole system, that sees new directions, analyses opportunities, welcomes innovation and decides on a course or direction, ensuring that managers and all staff perform cost/benefit analysis, enhance turn-around-time (TAT), utilise TQM and continuous quality improvement, so that they perform to appropriate standards.

However, there are management skills which when coupled with scientific and clinical understanding can make

almost unchallengeable the role of laboratory scientists and physicians. Expert Systems are new software applications that can have great effect in the hospital environment when programmed with the expertise and understanding of the skilled laboratory professional. With this knowledge they might be used to suggest the most efficient way to direct specimens through the laboratory, how to optimise ordering and interpretation and integrate this with the many other data points in the patient record. Into this might be woven quality control, medical interpretation, biological validation and variation issues.

Information systems and information exchange hold the system together. We are and will continue to be judged by how efficiently information goes through the system. Knowing the potential and practical applications of information technology is added value from the laboratory professional. This is the real challenge of modern communication.

Appropriate utilisation is another challenge which can enhance our relevance in the whole health care environment. It is not simply eliminating unnecessary tests but also using many approaches to improve their interpretation and application, with the realisation that an expensive test appropriately used may lead to greater savings elsewhere in the system. We need to master this to be the consultants we hear so much about, but which are more myth than reality in the absence of these skills. Improving turn-around-time is a necessary part of appropriate utilisation. How many laboratory procedures have been structured for the convenience of the laboratory rather than the customers? We have to ensure that the right test is delivered, at the right time, to the right person, at the right cost.

## The education challenge

As we move towards the laboratory almost without walls, we are demolishing the medieval castles of laboratory medicine. Our response to the education challenge is the key as to how open our profession is to change. The speed of change has removed the luxury of thinking what we might do at some later date. Our relevance now depends on what we are doing or have done to respond to the education challenge.

The American Association for Clinical Chemistry (AACC) has had the energy and vision to put together a task force to identify the factors most likely to impact and shape the future practice environment (10). They identified 5 Core Competencies that will be necessary for Clinical Chemists to practise successfully in the future:

Firstly, the fundamental skills of having the training, expertise and experience required for certification in Clinical Chemistry.

Secondly, the clinical skills to serve as consultants and educators in the medical community.

Thirdly, the scientific and technical skills to assess objectively new technologies, understand and apply informatics, take the lead in the introduction of new technologies and conduct appropriate research.

Fourthly, the management skills to develop strategic business plans for resource management, process management, team building, team problem solving and team leadership.

The final Core Competency is professional development. This is career long continuing education, taking part in professional organisations, sharing knowledge, and maintaining expertise.

The AACC is giving priority to the clinical, scientific and technical, and management skills.

These issues lead us to the training for the clinical laboratory scientist. While there may be fewer in the future, survival will be for the most highly qualified. This has been addressed earlier when discussing greater multi-disciplinary involvement of the scientist with the blurring of distinctions between chemistry, haematology, and microbiology, plus the difficulty if not the impossibility of being a consultant without better education in non-traditional areas. However, the management challenge also means that there must be training in information management, financial administrative management, training people to function effectively in committees and in the medical environment, together with the recognition that appropriate utilisation cannot be achieved without basic medical knowledge. All of us need better communication skills. Training must reflect the broad based skills, yet many training programs have not adjusted to this. We probably all recognise the vital importance of information systems, yet in a survey published in 1995 only 4 to 5% of training time of residents and clinical chemists was spent in information training (11).

## Training for the laboratory physician (clinical and anatomic pathology)

There are major difficulties in trying to predict the number of laboratory physicians required. There is need for increased training in management and informatics, and this is not being responded to appropriately in many programs. The training and skills to foster appropriate utilisation are not an integral part of current physician training. Anatomic pathologists, who have traditionally felt secure from many of the changes in laboratory medicine, are not immune from the winds of change in our health care climate. In many countries there is a retirement bulge of laboratory physicians over the next few years that will provide job opportunity but which will

mask the problem that the number of academic and service positions is decreasing because all will not be replaced. The anatomic pathologist is not being trained to face the challenges of technology in the next 5 to 10 years.

Economically stressed hospital administrators will be reluctant to employ laboratory physicians in Clinical Pathology unless it is clear what added value they bring. The skills and training issues outlined for the scientists are relevant (12). However, in my view the laboratory physician will survive only if there is a clearly defined clinical or research role for that individual, in addition to the more obvious laboratory service component. Why would anyone pay more for a physician if a scientist can fulfill the same role. The clinical pathologist in chemistry, haematology, and microbiology will have to provide research activity and/or they will have been trained to function as a clinical specialist with appropriate clinical qualifications. These areas will be the crucial added values to the laboratory service component.

## The challenge of basic and applied research

For all laboratory specialists there are training and retraining issues for the present and the future. However, while stressing skills we must not forget research. Economic and market pressures have been diminishing the time and resources available for research. We are not doing enough to protect this vital component of our future. To be competitive basic researchers need most of their time protected for research. In applied research there are still opportunities but laboratory directors in their strategic planning need courage and support when "downsizing" to be strong and protect the research environment. This is a very difficult demand. Unless it is faced courageously laboratory medicine as an academic discipline will not be in the forefront of new ideas and will not be producing the teachers for the next generation. Unimaginative approaches to reorganisation in various parts of North America have already reduced the available academic talent.

## The struggle for control

In the midst of all the challenges we cannot close our eyes to politics and human nature. These are combined with economic pressures in the uncertain laboratory situation. There are elements of a struggle for control among and between laboratory physicians, scientists and managers (12). There are also struggles for spheres of influence for public and private laboratories. This is not even detailing the efforts of accountants and administrators to gain greater control over laboratories. If laboratory professionals cannot resolve this quickly and co-operate to give new meaning to the various roles of all clinical laboratory staff in the rapidly changing health care system, then many will rapidly become irrelevant. The divisiveness and rivalry among physicians and scientists and between all the laboratory disciplines contributes greatly to our professional weakness.

## The perils of commercialisation and an uncontrolled market

As we move to a more corporate approach to laboratory medicine (13) we must not lose sight of the hazards of increasing its commercialisation and offering it as a commodity to be bought and sold. Those whose main motivation is wealth or profit can put the whole system in danger. The factory mentality and financial dominance can downgrade teaching and research. As a profession we are already too silent on professional ethical issues. Even more important we are too silent on ethical issues which affect the patient and the community. Have we nothing to say on concepts of justice and equity, do we have concerns as to how impersonal and uncaring our working environments may become, and will the first casualties of commercialisation be ourselves and/or our families?

## Conclusion

No matter what training or retraining is given, two of the most important elements in deciding if laboratory scientists and physicians will have any role in managing laboratory resources in the year 2000 will be the vision and courage being demonstrated now. The emphasis must be on action not reaction (14). Flexible, creatively productive laboratory professionals making others aware of their worth and of the added value they bring, will determine the future role.

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